

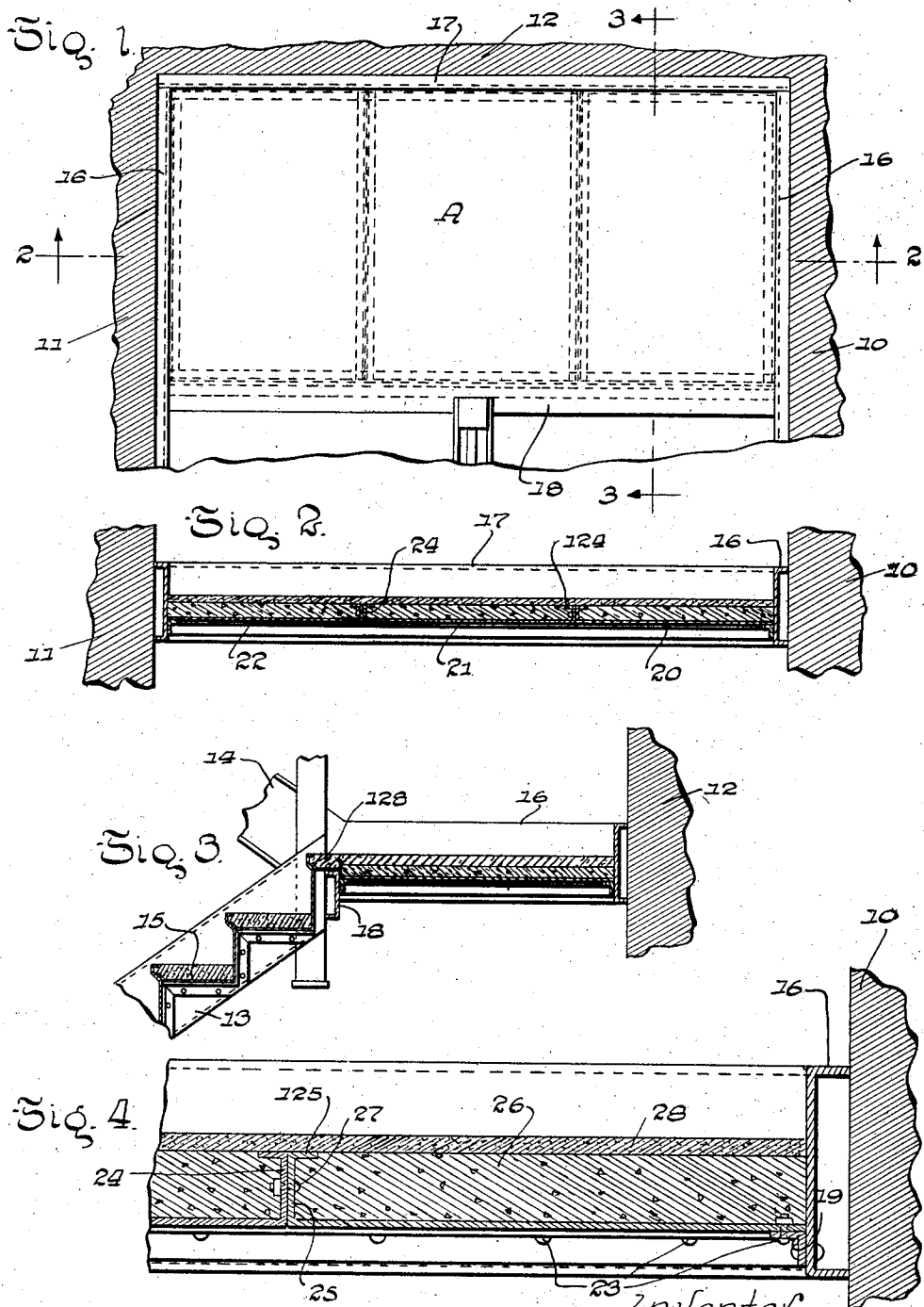
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REINFORCED CONCRETE STAIR PLATFORM AND THE LIKE

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REENFORCED CONCRETE STAIR PLATFORM AND THE LIKE.

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This invention relates to improvements in reenforced concrete stair platforms, and the like.

In buildings having concrete stairways, much difficulty and high costs have heretofore been encountered in providing the usual intermediate stair landings or platforms with the requisite degree of safety. Such landings are generally of elongated rectangular form in plan view, with the building-supported beams at the two ends thereof and another beam along one side and also supported by the building, the stairs being so arranged that one flight rises from the platform or landing and another flight descends therefrom. In the construction of such platforms or landings, it has been the general practice to employ a channel beam extending from one end to the other end, located a distance spaced outwardly from the rear or back wall a distance corresponding to the width of the platform. Between this last mentioned beam and the opposed wall-supported beam have been extended a plurality of T-bars spaced at the desired distance apart and with the web of the T-bars extended downwardly, the beams and T-bars providing a supporting structure for a plurality of flat sheet metal plates laid thereon and secured around their edges thereto, the sheet metal plates in turn forming the bed for the layer of concrete.

In such prior constructions, special brackets for supporting the ends of the T-bars are required and high-priced labor necessitated in attaching these brackets and applying the T-bars. Furthermore, due to the relatively great area of the flat sheet metal plates which are inherently flexible, the latter very frequently buckle when the concrete is poured thereon, thus making it necessary to remove the concrete and use new plates and re-pour the concrete. Also, on account of the webs of the T-bars being extended downwardly, said webs remain exposed when the platform is finished, thus presenting an unsightly and unfinished appearance.

One object of my invention is to provide an improved stair landing or platform construction, or the like, such as a balcony, wherein the use of the cross-bars, such as the T-bars, is eliminated without sacrifice of strength and with a lesser cost.

A further object of my invention is to

utilize, in a platform or landing of the character indicated, the sheet metal plates in such manner that they take the place of the T-bars or other cross-beams, and, in addition, are so formed as to produce reinforcements for the concrete imbedded therein.

Another object of my invention is to provide a stair landing or platform structure which will have a neat and finished appearance, with a smooth, unbroken underneath surface; to so arrange the construction that the concrete may be poured with a slab effect, if desired, to facilitate replacement of sections; and to otherwise reduce the cost of construction.

In the drawing forming a part of this specification, Figure 1 is a top plan view of a stair landing or platform, showing my improvements in connection therewith, portions of the surrounding building walls being shown in section. Figure 2 is a vertical, sectional view, corresponding to the line 2—2 of Figure 1. Figure 3 is a vertical, sectional view, corresponding to the line 3—3 of Figure 1 and showing portions of the descending and rising flights of stairs leading to the platform. And Figure 4 is a detailed, sectional view upon an enlarged scale, illustrating certain structural features employed in my invention.

In said drawing, one of the side walls of the building defining the stairway shaft is indicated at 10, the opposite side wall at 11, and the back or rear wall 12. As customary, risers for the stairs are employed, one of the descending risers being indicated at 13, the same being in the form of a channel. One of the ascending risers is indicated at 14, it being understood that there are two such risers for each flight. Said risers terminate at the level of the stair platform or landing, which is indicated generally by the reference character A. Any suitable form of steps 15 may be utilized, one well known form being indicated in the drawing.

In carrying out my invention, end wall-supported beams 16—16 are employed, the same being preferably in the form of channels, with the flanges thereof extended outwardly, as shown best in Figure 2. A third wall-supported beam is also employed, the same being indicated at 17 and preferably in the form of a channel with the flanges outwardly, as indicated in Figures 3 and 4.

Said beams are supported from the building walls in any suitable or customary manner.

The front or forward edge of the platform A is defined by a fourth beam 18, also preferably in the form of a channel, as shown in Figure 3, said channel 18 being of preferably lesser height or size than the other beams 16 and 17 and also downwardly offset to some extent with reference to the rear channel 17, as shown in Figure 3. The channel 18 is secured to and supported by the end beams 16—16, as will be understood.

On the inner opposed faces of each of the beams 16, 17, and 18, and at a common level and below the tops of the respective beams, are secured suitable ledge- or shelf-forming elements which, in the instance shown, are in the form of angle irons 19—19, the same being continuous throughout each side of the platform structure.

A plurality of sheet metal plates 20, 21, and 22 are used, each of said plates being of a length sufficient to extend from the beam 18 to the beam 17, and to be supported at its front and rear ends on the corresponding angle bars 19—19. The plates will be made of such width that, when laid side by side, as shown in Figure 2, they will occupy or bridge the entire area of the rectangle defined by the beams 16, 17, and 18, and the outer side edges of the two outer plates 20 and 22 will rest upon and be supported by the angle irons 19 which are secured to the inner faces of the beams 16, as shown in Figure 2. All edges of the plates 20, 21, and 22, where the same engage the angle irons 19, will be secured to the latter at suitably spaced intervals as by bolts 23—23.

In the embodiment chosen for illustration, three of the sheet metal plates 20, 21, and 22 are employed, although this number may be varied, as will be understood. The central plate 21 is formed with integral up-standing vertical flanges 24—24 along each of its side edges, said flanges 24 being also preferably in-turned along their top edges, as indicated at 124. Similarly, each of the outer plates 20 and 22 is provided along its inner side edge with an integrally formed flange 25, the latter preferably also having an in-turned upper portion 125.

The height of the flanges 24 and 25 is made less than the total thickness of the concrete layer to be employed, and preferably such height will approximate the depth of the coarse layer of concrete, indicated at 26. When desired, the adjacent engaging plate flanges 24 and 25 may be bolted or otherwise rigidly secured together at intervals, as indicated at 27.

After the coarse layer of concrete 26 is in place, a finish layer 28 may be employed, to give the desired neat appearance, and said layer will preferably be extended out-

wardly, as indicated at 128, to constitute the tread of the corresponding steps.

With the arrangement shown, it is evident first that, when the plates 20, 21, and 22 are in place, a form or mould is obtained for the concrete, said form being constituted by said plates and the four beams 16, 17, and 18, thus enabling the concrete to be poured; also, the formed adjacent edges of the plates together constitute I-beams, as will be clear from Figure 4, and these not only strengthen, reinforce and rigidify the individual plates or sheets but, when the concrete is poured therearound, become imbedded in the latter and thus serve as imbedded reinforcements within the concrete layer.

As obvious, the forming of the plates is a very simple and inexpensive matter; the same may be done at the shop before the plates are shipped to the job under construction; and the rigidifying of the plates eliminates one of the great sources of difficulty heretofore encountered, namely, the tendency of the plates to buckle or warp when the weight of the concrete comes thereon. With my arrangement, all four edges of each sheet are either secured to the angle supports or reinforced by the integral flange formation, and consequently the danger of warping is eliminated or minimized.

Other features of my construction reside in the plain, unbroken and smooth under-surface of the platform or landing, there being no depending bars or ribs, or the like; and the fact that, in such instances as may be found desirable, the concrete layer may be poured and allowed to set in the form of separate slabs, each slab corresponding to a sheet or plate. Where this is desirable, the uniting means 27, between adjacent plate flanges, may be omitted, in which case the concrete may be removed in sections or slabs and relaid for purposes of repair or renewal.

It will be obvious that a minimum of labor and expense is involved in fabricating my improved platform; the necessary strength is readily obtainable; the number of parts required is reduced to a minimum; and the other advantages hereinbefore referred to are present in the way of appearance and facility, and the like.

While I have herein shown and described what I consider the preferred manner of carrying out my invention, the same is merely illustrative and I contemplate all changes and modifications which come within the scope of the claims appended hereto.

I claim:

1. A reinforced concrete stair platform comprising: two wall-supported end beams; a wall-supported side beam; a front side beam, extending between said end beams and spaced outwardly from said wall side beam; shouldered-supporting elements on

all of said beams; a plurality of separate formed sheets seated upon said shouldered elements, said sheets being abutted and covering the entire area of the platform defined by said beams and providing therewith a form for the concrete, said sheets having upwardly turned integral flanges extending crosswise between said wall and front side beams; and a layer of concrete on said sheets and in which said flanges are imbedded.

2. A reinforced concrete stair platform comprising: wall-supported end beams and a wall-supported side beam; a front side beam, supported at its ends by said end beams and spaced from said wall side beam; ledge supporting means carried by each of said beams on their inner faces; a plurality of metal sheets supported on said means and secured thereto and arranged in a series from one end beam to the other end beam, said sheets having flanges along their adjacent edges extending between said side beams; and a layer of concrete on said sheets.

3. A reinforced concrete stair platform comprising: wall-supported end beams and a wall-supported side beam; a front side beam, supported at its ends by said end beams and spaced from said wall side beam; ledge supporting means carried by each of said beams on their inner faces and disposed below the tops of the respective beams; a plurality of separable, horizontally disposed metal sheets supported on said means and secured thereto, said sheets having vertical upstanding flanges along their edges extending between said side beams; and a layer of concrete on said sheets, each of said flanges comprising a vertical section and a horizontal section, the vertical sections of adjacent sheets being secured together.

4. In a stair platform, the combination with two end and one side wall-supported channels, corresponding to three sides of the platform; of a fourth channel supported at its ends by said end channels and spaced outwardly from said first-named side channel; angle irons extending along and secured to the inner faces of each of said channels below the top edges thereof and in a common plane; a series of independent metal sheets supported upon said angle irons and secured thereto around their edges, said sheets covering the entire area defined by the channels, said sheets, along adjacent edges, having upwardly extending, integrally formed flanges, said flanges extending between said wall and fourth channels and constituting cross-beams; and a layer of concrete on said sheets and in which said flanges are imbedded.

5. A reinforced concrete platform structure including: three wall-supported beams, one along one side and two at the ends of the platform; a fourth beam supported at its ends by said end beams and spaced from

said side beam; ledge supporting elements extending continuously along the inner faces of said beams and disposed on a common level and below the tops of the beams; a plurality of separable metal sheets supported at their edges upon said elements and secured thereto, said sheets and beams constituting a form for the concrete, said sheets having integrally formed upstanding flanged edges extending in a direction between said side beams; and a layer of concrete overlying all of said sheets and of a depth greater than said flanges, the bottom sides of said sheets presenting an unbroken flat surface on the underside of the platform.

6. A reinforced concrete platform structure including: three wall-supported beams, one along one side and two at the ends of the platform; a fourth beam supported at its ends by said end beams and spaced from said side beam; ledge supporting elements extending continuously along the inner faces of said beams and disposed on a common level and below the tops of the beams; a plurality of separable metal sheets supported at their edges upon said elements and secured thereto, said sheets and beams constituting a form for the concrete, said sheets having integrally formed upstanding flanged edges extending in a direction between said side beams; and a layer of concrete overlying all of said sheets and of a depth greater than said flanges, each of said flanges consisting of a vertically extending section and a horizontal section at the top thereof, the vertical sections of adjacent flanges being secured together, whereby a plurality of I-beams are formed with continuous flanges therebetween at the bottoms thereof.

7. In a reinforced concrete stair platform including: spaced, rear and front side, wall-supported beams; ledge supporting elements extending along the opposed inner faces of said beams and disposed below the tops thereof; a plurality of separately formed sheets supported at their ends upon said elements and secured thereto, said sheets being arranged side by side and provided with upwardly extended, integral flanges, extending between said beams; and a layer of concrete on said sheets and in which said flanges are imbedded.

8. A reinforced concrete platform structure including: spaced, front and rear side, wall-supported beams; ledge supporting elements extending along the opposed inner faces of said beams and disposed at a common level below the tops of the beams; a plurality of independent metal sheets supported at their ends upon said elements and secured thereto, said sheets and beams constituting a form for the concrete and said sheets having integrally formed flanged edges extending in a direction between said beams, each of said flanges including an up-

wardly extending section and a horizontally
extending section at the top thereof, the ver-
tical sections of adjacent flanges being se-
cured together; and a layer of concrete over-
5 lying said sheets and of greater depth than
said flanges and in which the latter are im-
bedded, whereby a plurality of I-cross-beams

with continuous bottom flanges therebetween
are formed.

In witness that I claim the foregoing I 10
have hereunto subscribed my name this 24th
day of March 1928.

HARVEY W. SCHICK.